S

RESTRICTED CIRCULATION

This paper is not an official document; it is for information only and must not be quoted in any printed publication.

AGRICULTURAL MEMORANDUM No 674

Sequences of dry days for grass conservation in Cumbria, Northumberland and Durham by R A Blackmore and J B Tyldesley.

BACKGROUND

Sequencies of 1-5 days over the whole conservation season (May-early September), for Lancashire and Yorkshire were studied in Agricultural Memorandum 616. This paper extends the work to the more northerly counties of England.

PROCEDURE

Thirteen stations with 20 years of rainfall record, suitably spaced over the region, were used. The definitions and procedures were the same as those used in Ag. Mem. 616.

RESULTS

It was again found that the variability from year to year and with time of year was greater than from station to station. Stations with similar patterns of dry days were grouped and the results combined. The grouping formed a natural geographical pattern, which is shown in Table 1. Table 2 gives the results for western coastal areas, and Table 3 for central and eastern districts. Those areas of the Lake District with very high rainfall were not considered.

Table 1

Area	Stations	Period	Height in metres above MSL
Cumbrian Coast	Workington	1952-71	9
Solway Firth	Carlisle	1951-70	26
Cumbrian Foothills and Central Pennines	Hury	1951-70	263
	Appleby	1951-70	146
	Coniston	1951-70	76
	Kendal	1951-70	41
East of the Pennines	Cockle Park	1951-70	99
	Howick Hall	1951-70	34
	Ilderton	1951-70	76
	Middlesbrough	1951-70	9
	Durham	1951-70	102
	Tunstle	1951-70	221
	Thirsk	1951-70	35

TABLE 2 Frequency of starting days for dry sequences of different lengths for western areas of the Northern Region

Dry sequences of:-	1 day				2 days				3 days				4 days			5 days		
CUMBRIAN COAST Period	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	mean	1 yr in 4	3 yrs in 4
1st half May	6.9	9	5	3	4.3	7	2	1	3.1	6	1	0	2.5	4	1	1.9	4	0
2nd half May	10.5	13	9	7	8.4	12	6	4	6.8	10	4	3	5.7	8	3	4.6	7	3
1st half June	10.1	12	9	8	7.5	10	6	4	5.7	8	4	2	4.6	7	2	3.7	7	1
2nd half June	7.3	9	6	5	4.7	7	3	1	3.3	5	1	1	2.4	4	1	1.8	4	0
1st half July	8.3	11	7	5	5.9	8	4	3	3.5	6	2	1	2.8	4	1	1.9	3	0
2nd half July	8.8	11	7	6	5.9	8	4	3	4.1	6	2	1	2.9	4	1	2.3	4	0
1st half August	7.7	11	6	4	4.8	7	2	2	3.1	6	1	0	2.3	4	0	1.7	3	0
2nd half August	8.0	11	6	4	5.3	8	3	2	3.7	6	2	1	2.9	5	1	2.2	5	1
1st half September	7.5	10	5	4	5.2	8	2	1	3.9	7	1	0	3.2	6	0	2.7	4	0
SOLWAY LOWLANDS																		
1st half May	7.0	10	5	2	4.8	8	2	1	3.5	5	1	0	2.7	5	1	2.2	4	0
2nd half May	9.1	12	7	4	7.0	10	5	2	6.0	10	3	1	5.1	9	2	4.2	8	2
1st half June	9.1	11	8	7	6.4	9	5	3	4.9	8	3	1	3.9	7	1	3.3	7	1
2nd half June	6.7	9	5	3	4.5	6	3	2	3.2	5	2	0	2.3	4	2	1.8	3	1
1st half July	6.9	9	5	4	4.7	7	3	2	3.3	5	2	1	2.3	4	1	1.5	2	0
2nd half July	8.1	10	6	4	5.0	7	3	2	3.5	5	1	0	2.5	4	1	1.9	3	0
1st half August	6.5	9	5	3	4.0	6	2	1	2.7	5	1	0	2.1	4	0	1.5	2	0
2nd half August	6.7	10	4	2	4.3	7	2	1	3.1	5	1	0	2.7	5	1	2.1	4	1
1st half September	6.4	9	4	3	4.1	7	2	1	2.9	5	1	0	2.3	4	0	1.9	3	0

TABLE 3 Frequency of starting days for dry sequences of different lengths for central and eastern areas of the Northern Region

Dry sequences of:-	1 day				2 days				3 days				4 days			5 days		
CUMBRIAN FOOTHILLS AND CENTRAL PENNINES Period	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	9 yrs in 10	mean	1 yr in 4	3 yrs in 4	mean	1 yr in 4	3 yrs in 4
1st half May	5.5	8	4	1	3.5	6	2	0	2.6	4	1	0	2.0	3	0+	1.4	2	0
2nd half May	8.8	12	7	4	6.7	10	5	1+	5.4	8	3	0	4.3	7	2	3.4	6	1+
1st half June	8.0	11	7	4	5.6	8	4	1+	4.1	7	3	1	3.1	6	1	2.4	5	0+
2nd half June	6.1	8	4	2	3.8	6	2	0	2.5	4	1	0	1.6	3	0	1.1	2	0
1st half July	6.0	8	4	2	3.8	6	2	1	2.5	4	1	0	1.7	3	0+	1.2	2	0
2nd half July	7.1	9	5	2	4.7	7	2	0	3.3	5	1	0	2.4	4	0+	1.9	2	0
1st half August	5.5	8	4	1	3.4	6	1	0	2.3	4	1	0	1.6	3	0+	1.1	2	0
2nd half August	6.4	10	4	1	4.1	7	2	0	2.9	5	1	0	2.1	4	0+	1.6	3	0
1st half September	6.0	8	4	3	3.8	6	1+	1	2.7	4	1	0	2.0	3	0	1.6	2	0
EASTERN																		
1st half May	7.2	10	5	3	4.7	8	2	1+	3.4	6	1+	0+	2.5	5	1	1.7	3	0+
2nd half May	9.5	13	7	5	7.2	11	4	2	6.0	10	3	1+	5.1	9	2	4.3	8	2
1st half June	9.3	12	8	6	6.8	10	5	3	5.1	8	3	2	3.9	7	2	2.9	6	1
2nd half June	7.7	10	6	5	4.8	7	3	2	3.1	5	1+	1	2.1	4	0+	1.5	2	0
1st half July	7.4	10	6	4	4.8	7	3	2	3.0	5	2	1	1.8	3	1	1.2	2	0
2nd half July	8.6	12	7	4	5.9	9	3	2	4.2	7	2	1	3.2	6	1	2.5	5	0+
1st half August	6.8	9	5	4	4.1	7	2	1+	2.7	5	1	0+	1.9	3	0	1.5	3	0
2nd half August	7.9	10	6	4	5.2	8	3	2	3.5	6	1+	1	2.6	5	1	1.9	3	0
1st half September	7.5	10	6	4	4.7	7	2	1+	3.4	5	1	0+	2.5	4	0+	1.8	3	0

0+ is between 0 and 0.5.

1+ is beteeen 1 and 1.5

DISCUSSION

Tables 2 and 3 show that generally the Cumbrian coast has the most dry sequences, followed by Eastern districts and the Solway Firth area. The Cumbrian Foothills and Central Pennines have the least. The differences between areas are more marked than those found for Yorkshire and Lancashire and there are generally fewer of the long dry spells. Typically, the number of 5 day sequences is less than one-third the number of single dry days, and in many half-months the farmer can expect no 5 day dry periods for 3 years in every 4. Conventional haymaking will therefore be even more difficult than in Lancashire and Yorkshire.

In all areas the second half of May and the first half of June stand out as the best time for conservation. The second half of July is also favourable. The second half of August shows only a small advantage over the first half in these northern counties. The first half of September is quite favourable for a late cut.

FUTURE WORK

Dry spells do not give the whole story about the suitability of weather for conservation; the state of the crop at cutting and the detail of rainfall and atmospheric humidity thereafter, are also important. Ag. Mem. 628 by Mr S B Sims described a method of taking these factors into account. At present very heavy numerical work would be needed to do the full calculations for a network of stations, but there is hope that some short-cut methods will soon be developed.

REFERENCES

SIMS F P	1974	A method for estimating work days for grass conservation using accumulated vapour pressure deficit. Agricultural Memorandum No 628.
TYLDESLEY J B BLACKMORE R A RUMNEY R P	1974	Sequences of dry days for grass conservation in Lancashire and Yorkshire. Agricultural Memorandum No 616.

Any comments or suggestions on this paper should be sent to the first-named author.

Meteorological Office
ADAS
Windsor House
Cornwall Road
Harrogate

September 1974